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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/520,680

01/11/2005

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OGW-0344

9386

7590 02/22/2008
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EXAMINER

MAKI, STEVEN D

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

02/22/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/520,680	Applicant(s) SHIDA, ZENICHIROU	
	Examiner Steven D. Maki	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11-28-07 has been entered.

2) The disclosure is objected to because of the following informalities: In paragraph 46 on page 14, "F2" on line 11 of the paragraph should be --R2--; "F2" on line 15 (last line) of the paragraph should be --R2--; and "as shown in FIG. 4" should be --as shown in FIG. 5--. Appropriate correction is required.

3) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4) **Claims 1, 3, 8, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 105 (JP 11-001105) in view of Kogure et al (US 5,355,922) and Meyer (US 2005/0061410).**

Japan 105 discloses a pneumatic tire having a tread comprising four straight circumferential main grooves 14 separating five block rows ("land portions"). The tire has a size such as 225/50R16, which one of ordinary skill in the art would have readily understood as having a radial construction and being a passenger car tire size. See paragraph 28. Japan 105 teaches forming the land portion 18 (located second when

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counted from the outer side of a vehicle when the tire is mounted thereon) such that the land portion 18 has a convex ground contact surface. The profile of the tread is made to curve inwardly such that the distance from the tread surface curve M and the outer edge of the second land 18 is alpha. See abstract, figure 1 and figure 2. The distance alpha directly corresponds to the claimed depth d. Japan 105 teaches

$$R = 1 - 1.25 \alpha - (1 - \beta) - (1 - \gamma) - 0.017 \theta$$

wherein R1 is between 0.3 to 0.7. See paragraph 24. In other words, Japan 105 desires $R = 30\text{-}70\%$. Japan 105 teaches that stability of the tire is increased and deflection abrasion of the tire is prevented. See abstract. Japan 105 shows using alpha of about 0.2 mm to 0.6 mm to obtain a R of 30-70%. See figure 7. As can be seen from figure 2, "the vehicle outer sidewall surface of the second land portion has a height that is less than that of the wall of the main groove that faces the vehicle outer sidewall surface of the second land portion". Japan 105 illustrates the distance alpha as being a relatively small percentage of the groove depth (figure 2), but is silent as to numerical values for groove depth.

As to claims 1 and 8, it would have been obvious to one of ordinary skill in the art to provide the main grooves in the tread of Japan 105's pneumatic radial tire such that the depth d is 2-10% of the main groove depth D since Kogure teaches that conventional pneumatic radial tires passenger car tires have a groove depth of 8-11 mm. In his invention, Kogure teaches using a groove depth of 6-8.5 mm. Kogure notes that grooves having a depth less than 6 mm are no longer suited for practical use. See column 1 lines 5-10 and column 4 lines 1-10 of Kogure. One of ordinary skill in the art

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would have been motivated to use a groove depth such as 8 mm for Japan 105's main grooves to obtain a pneumatic radial passenger car tire suited for practical use. As previously mentioned, Japan 105 teaches a distance alpha (depth d) of 0.2 mm to 0.6 mm. When using a main groove depth of 8 mm and a distance alpha (depth d) of 0.2-0.6 mm, therefore, the ratio $d/D = 0.025-0.075$. In short, the depth d is 2.5 to 7.5% groove depth D. The range 0.025 to 0.075 falls within the claimed range of 0.02 to 0.10.

Furthermore, it would have been obvious to one of ordinary skill in the art to form Japan 105's tire such that (a) the tread comprises land portions each having a ground contact surface comprising a first circular arc having a single radius curvature radius in tire meridian cross section and (b) land portion 18 has the claimed first circular arc and the claimed second circular arc / curved line since (1) Japan 105 teaches that the ground contact surface of land portion 18 is made to curve inwardly away from curve M such that the distance from the tread surface curve M and the outer edge of the second land 18 is alpha and (2) Meyer teaches using different radii (e.g. TR1, TR2) to form the profile of a pneumatic tire such that the radii decrease from the tread center toward the tread ends to improve properties such as stability and handling; it being noted that Meyer (figure 1) teaches changing the ground contact surface from the first larger radius TR1 to the second smaller radius TR2 at the land portion located second when counted from the outer side of a vehicle when the tire is mounted thereon. Hence, Meyer teaches that curve M of Japan 105 can and should be defined a relatively large "first radius" such as radius TR1. When considered as a whole, Japan 105 and Meyer suggest defining ground contact surface at the inner side of land portion 18 using the

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large first radius and defining the ground contact surface at the outer side of land portion 18 using a smaller second radius (in contrast to either using only one radius smaller than that for curve M to define land portion 18 or using equal radii with different origins to define land portion 18). The teaching to obtain the claimed depth d comes from Japan 105's teaching to profile land portion 18 so as to define distance alpha in mm such that the resulting tire increases stability and prevents abrasion.

As to claim 3, Meyers teaches a first radius TR1 being 1.05 to 10 times the second radius TR2.

As to claims 13 and 14, it would have been an obvious alternative to one of ordinary skill in the art to provide the tread of Japan 105's passenger car tire with three circumferential grooves (left groove, center groove, right groove) and four land portions since it is taken as well known / conventional in the tire art to provide the tread of a pneumatic passenger car tire with either three (left groove, center groove, right groove) and four land portions (e.g. block rows) or four circumferential grooves and five land portions (e.g. block rows).

5) Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 105 in view of Kogure et al and Meyer as applied above and further in view of Europe 599 (EP 728599).

As to claims 2 and 9, it would have been obvious to one of ordinary skill in the art to provide the main circumferential grooves of Japan 105's pneumatic tire with a groove width such that depth d (distance alpha) is 1-15% of the groove width since Europe 599 discloses a conventional pneumatic tire as having a groove width of 8 mm and a groove

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depth of 8 mm (Table 1). As previously mentioned, Japan 105 teaches a distance alpha (depth d) of 0.2 mm to 0.6 mm. When using a main groove width of 8 mm and a distance alpha (depth d) of 0.2-0.6 mm, therefore, the ratio $d/W = 0.025-0.075$. In short, depth d is 2.5 to 7.5% groove width W. The range 0.025 to 0.075 falls within the claimed range of 0.02 to 0.10.

6) Claims 4-7 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 105 in view of Kogure et al and Meyer as applied above and further in view of Europe 405 (EP 728599).

As to claim 4, it would have been obvious to one of ordinary skill in the art to form Japan 105's land portion 18 with a first, second and third circular arc (three radii R1, R2, R3) since (1) Japan 105's land portion has a curved asymmetric profile and (2) Europe 405 suggests forming a block such that the surface of the block comprises a non-chamfered surface 21 and a chamfered surface defined by radii R1 and R2 to equalize ground contact pressure and improve handling stability. The non chamfered surface 21 disclosed by Europe 405 corresponds to curve M of Europe 105 and radius TR1 of Meyers. Thus, Europe 405 motivates one of ordinary skill in the art to further improve stability by obtaining the changing height resulting in distance alpha using two radii instead of only one radius.

As to claims 5-7 and 10-12, it would have been obvious to one of ordinary skill in the art to provide the vehicle inner side of Japan 105's land portion 18 with an inner circular arc having a curvature smaller than that of the first circular arc (claims 5, 10) such that the ratio $d'/D' = 0.01-0.1$ (claims 6, 11) and the ratio $R1/R2'$ is 2-10 (claims 7,

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12) since Europe 405 suggests chamfering both sides of a land portion (block) using an arc form so as to define a distance ("depth d") of 0.10 mm to 2.5 mm to equalize ground contact pressure and improve handling stability.

Allowable Subject Matter

7) Claim 1 would be allowable if amended to include the subject matter shown in Figure 5 and disclosed in present invention Tire 3 example (asymmetric and $R1 > R2 > R2' > R3$).

The prior art including Japan 105, Kogure, Meyer and Europe 405 fail to render obvious reconfiguring the second land portion of Japan 105 so as to arrive at the tire of proposed claim 1.

Remarks

8) Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

9) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven D. Maki/
Primary Examiner, Art Unit 1791

Steven D. Maki
February 16, 2008